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ABSTRACT

Ninth grade students (n=298) participated in a study to examine the influence source credibility, message, quality, and personal relevance on HIV prevention message efficacy. A pilot study with adolescent focus groups created the high and low quality messages, as well as the high (HIV+) and low (worried parent) credibility sources. Participants appeared to respond low in involvement and as expected, credibility proved important to those exposed to the low quality message. More favorable responses were recorded when participants were exposed to a high quality message. Participants exposed to a low quality message condition produced less counter-attitudinal responses when receiving the low quality message from a highly credible source (i.e., the HIV+ adolescent). The potential influence of message source credibility as a crucial peripheral cue is discussed in terms of HIV/AIDS prevention. (Contains 30 references.) (JDM)

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Adolescent HIV Prevention: An Application of the Elaboration Likelihood Model

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Adolescent HIV Prevention: An Application of the Elaboration Likelihood Model

Abstract

Two hundred and ninety eighth and ninth grade students participated in a study to examine the influence source credibility, message, quality, and personal relevance on HIV prevention message efficacy. A pilot study with adolescent focus groups created the high and low quality messages, as well as the high (HIV+) and low (worried parent) credibility sources. A 2x2x2 between-subjects design assessed the influence of message source credibility, message quality, and personal relevance with the topic of HIV as mediators of potential attitude change. Participants appeared to respond as low in involvement, while producing more favorable responses when exposed to a high quality message, but as expected, credibility proved important to the participants exposed to the low quality message. Similarly, participants exposed to a low quality message condition produced less counter-attitudinal responses when receiving the low quality message from a highly credible source (i.e., the HIV+ adolescent). The potential influence of message source credibility as a crucial peripheral cue will be discussed regarding HIV/AIDS prevention.

Adolescent HIV Prevention: An Application of the Elaboration Likelihood Model

HIV infection is still a threat to adolescents. The most recent data indicate that 4,797 13-19 year-olds are currently HIV positive, whereas 3,725 are AIDS diagnosed. Although not remarkably large numbers, the problem does becomes more critical when examining the HIV/AIDS data for 20-24 year-olds. In this age bracket, there are over 40,000 men and women either HIV positive or AIDS diagnosed (Centers for Disease Control and Prevention, 2000). The increase in the number of HIV/AIDS cases may be due to the nearly decade long latency period between exposure and symptoms of infection (Boyer & Kegeles, 1991; Kunins, Hein, Futterman, Tapley, & Elliot, 1993), and thus highlights that many of the 20-24 year-old infected individuals likely contracted the disease during adolescence.

Prevention research has examined numerous factors in an attempt to curtail adolescent HIV/AIDS cases. Two specific variables recently investigated include the type of message (Jemmott, Jemmott, and Fong, 1998), as well as who is delivering the persuasive appeal (Carasso, 1998). For instance, Jemmott et al. (1998) found a safer-sex, rather than abstinence message, to be the most persuasive appeal. The adolescents likely found this message to be more realistic, and of a higher quality, than the more rigid abstinence program.

In addition to what is being said, who delivers the message also plays a crucial role in adolescent HIV/AIDS prevention. For instance, recent work incorporating peer counselors in a theater (Berlin & Hantman, 1999) or hip-hop musical format (Jahi, Chwascinska, & Chaich, 1999) has been effective in facilitating adolescent attitude or behavior change. Despite these important findings, what appears lacking in the research

literature is an explication on how exactly these adolescents cognitively processed the peer-led, high-quality HIV prevention appeals. An understanding of not only if such interventions work, but how they work, would assist prevention program planners to better serve the adolescent population.

Persuasion theory: A potential new prevention direction

Some of the most common theories applied to HIV prevention, the Health Beliefs Model (HBM; Janz & Becker, 1984; Rosenstock, 1974), Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1980; Fishbein & Middlestadt, 1989), and the AIDS Risk Reduction Model (ARRM; Catania, Kegeles, & Coates, 1990), although useful for other purposes, may not provide the best models to address the phenomenon of forewarning. For instance, the HBM seems to assess personal vulnerability and HIV risk beliefs, rather than attitudes and biases (Brown, DiClemente, & Reynolds, 1991). Although the TRA taps into attitudes, it fails to address the internalized norms or attitudes that may play a role in influencing behavior (Valandingham, Suprasert, Grandjean, & Sittitrai, 1995). Finally, the ARRM is a model that leads up to the stage of taking action, yet little empirical work has been done examining this crucial stage (Flowers, Sheeran, Beail, & Smith, 1997). For the ARRM, the role attitudes play in producing action still remains a pertinent question.

To study the persuasiveness of HIV prevention messages and sources, the field seems to need a novel theoretical framework that describes the internalized attitudes and cognitive processing that results from exposure to a prevention program. Social psychological persuasion research may this theoretical need. Namely, this framework may provide an explanation as to what conditions induce behavior and attitude change.

and what factors lead some individuals to change their attitudes and behaviors more readily than others (Helweg-Larsen & Collins, 1997; Petty, Gleicher, & Jarvis, 1993).

The Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1981, 1986) is especially useful for describing the cognitive processing that occurs in response to attempts at persuasion. Heesacker, Conner, and Prichard have argued (1995) that attitude change and persuasion theories, and the ELM in particular, may be useful in prevention research. The perspective of this paper is that the ELM, when coupled with the already abundant information on adolescent prevention messages, could provide prevention planners with information to construct effective prevention programs that could hopefully curtail adolescent HIV/AIDS exposure and infection.

The Elaboration Likelihood Model (ELM): Basic concepts

The ELM describes how an individual's attitudes change as a result of cognitive processing of a persuasive message. Petty and Cacioppo (1986) define attitudes as "general evaluations people hold in regard to themselves, other people, objects and issues" (p. 127). Attitude change is an important precondition for behavior change, which is often the goal of persuasion. The direction, degree, and persistence of the attitude change is affected, according to ELM, by the nature of the cognitive processing that occurs. The ELM employs some specific terminology to characterize this cognitive processing.

Elaboration and elaboration likelihood. The ELM defines elaboration as the extent to which an individual thinks about issue-relevant information. The person's motivation and ability to exert this cognitive effort in considering important message information determines the degree of elaboration likelihood. Elaboration likelihood is

high when the person appears inclined to evaluate a message based upon overall argument quality and merit. Conversely, elaboration likelihood is low when a person lacks the motivation and/or ability to carefully scrutinize the content of presented information. This does not mean that cognitive processing does not occur, but merely that it is not focused on issue-relevant message content.

While this distinction yields two differing styles of processing, it is important to realize that they are not mutually exclusive. According to the ELM, the degree of elaboration exhibited by a particular recipient in response to a given message may lie at any point along a continuum, ranging from high to low elaboration. The point occupied in a particular instance reflects the degree to which one style of processing predominates over the other in that situation and at that moment. Petty and Cacioppo (1981, 1986) describe these competing styles of processing as two distinct "routes to persuasion": the central and peripheral routes.

The central route. Central route is a term denoting the high-elaboration style of processing. The recipient carefully scrutinizes all message information, relates it to existing issue-relevant knowledge, and then debates the information's applicability to consideration of attitude and behavior change based upon the merit of the argument. This style of processing tends to result in enduring attitude change predictive of future behavior.

The peripheral route. Conversely, peripheral route is a term denoting the low-elaboration style of processing. It is typically predominant in situations such as low personal relevance, where the recipient is not strongly motivated to expend resources on processing the message. Instead of thoughtful consideration of message content, the

recipient uses various peripheral cues (such as source credibility) to determine resulting attitudes. Attitude change via the peripheral route has been shown (Heesacker, 1986) to be more superficial, transient, and less predictive of behavior than change via the central route.

Personal relevance, message quality and source credibility

There are many factors that could potentially influence a message recipient's motivation or ability to attend to a message, and thus alter elaboration likelihood. This study is concerned with three of these: personal relevance, message quality and message source credibility.

Personal relevance. Within the ELM, personal relevance, or involvement, is the level of importance the message recipient places upon the presented message topic. Petty and Cacioppo (1981, 1986) support the supposition that as personal relevance increases so does the person's motivation to thoughtfully consider the message. Highly involved participants appear more likely to elaborate on the presented information, and therefore process messages via the central route. Low-involved participants appear more likely to attend to situational cues and engage in less elaboration. Under these conditions, participants appear more likely to process information via the peripheral route.

Message quality. Little is known as to what constitutes a high quality message, because as Petty and Wegener (1998) note, although message quality has been manipulated in myriad experiments, it is commonly done so to examine another variable (e.g., source credibility). While definitive studies regarding the composition of high or low quality messages may be lacking, operationally defined message quality has been used in order to study this variable. According to the ELM, strong arguments increase

elaboration likelihood for highly involved participants, but possess little influence upon those uninvolved with the presented topic. More specifically, under high involvement conditions, high quality messages creative positive thoughts and increased agreement with the message topic. Conversely, under low involvement conditions, high quality messages may reinforce underlying participant biases or negative ideas regarding the topic, thus reinforcing less agreement and little to no persuasion (Petty & Cacioppo, 1981, 1986).

Message source credibility. Petty and Wegener (1998) underscore that source variables may not always operate the same under varying situations. Considering the limited empirical and theoretical work incorporating attitude-change research with HIV prevention, an examination of the myriad analog work involving source credibility paradigm may provide a potential new direction for understanding HIV prevention program efficacy. Numerous studies (Chaiken & Maheswaran, 1994; Heesacker, Petty, & Cacioppo, 1983; Petty, Cacioppo, & Goldman, 1981) have found that sources perceived as expert lead to enhanced message persuasiveness.

Current study

The present study attempted to determine how the factors of perceived source credibility, message quality, and personal relevance to HIV interrelate to contribute to the persuasiveness of an adolescent HIV prevention message. Participants were first assessed for personal relevance to HIV, and then randomly assigned to one of four conditions in a 2x2x2 between-subjects design. The first factor refers to the manipulated credibility of the message source, with students having been informed the speakers were either high (HIV positive) or low (worried parent) in credibility. The second factor refers

to the manipulated message quality, with students having heard a high or low quality message. The third factor refers to the level of personal relevance with HIV, with participants being placed into high or low categories based upon their pre-screening scores. Finally, to differentiate this study from others of a similar design (see Petty et al., 1981), we will derive the high and low quality messages, and high and low credibility sources, from a sample of the adolescent population to be studied. This will facilitate a study of the cognitive processing that adolescents engage in when hearing messages that they, rather than the experimenter(s), had a hand in designing.

Method

Participants

Two-hundred and ninety eighth and ninth grade students who attend a suburban intermediate school in eastern Pennsylvania participated in three separate rounds of testing (screening, pre-test, post-test). Ages ranged from 12 to 15 with a mean age of 13.5 years. Caucasians represented 85 percent of the sample, six percent were African American, two percent were Hispanic, and seven percent were from other minority groups. All students were required to return an informed consent form signed with the signatures of both themselves and their parents.

Instruments

AIDS Involvement Measure. The AIDS Involvement Measure (Flora & Maibach, 1990) is a four item self-report questionnaire using a Likert-type scale. It was designed to assess involvement with HIV/AIDS as defined by the ELM (Petty & Cacioppo, 1986). A single factor loading of the four items accounts for most of the variance (Eigenvalue = 4.35), whereas internal consistency is reported as a Cronbach's alpha of

.86. A single numerical score ranging between 0 to 4 provides the data for the AIDS Involvement Measure, with higher scores indicating a higher level of involvement with the topic of HIV/AIDS. Validity data for the measure was not available.

Thought-Listing Procedure. The thought listing technique is a cognitive response measure identical to that used in prior ELM research to record message processing. After being given 150 seconds to complete the listing of all thoughts regarding a message, participants' post-code each response as favoring (+), counter-argumentative (-), or neutral (0) in regard to the HIV prevention message content. This is the most commonly used practice of self-postcoding (Cacioppo, Glass, & Merluzzi, 1979), and was found as reliable as coding by independent raters (Petty, Harkins, Williams, & Latane, 1977).

Attitude question. Following the presentation of the taped message, participants were asked the following question: How effective do you think this message would be in changing teenagers' attitudes toward AIDS prevention? This question was designed as a measure of overall attitude change or persuasion following the taped prevention presentation.

Survey About AIDS for Seventh and Eighth Graders (SASEG). The SASEG is a self-report survey designed to assess seventh and eighth grade students' knowledge and attitudes about HIV/AIDS (Carabasi, 1988; Shaw, 1991). The instrument consists of 57 forced-choice questions divided into three sections. These sections are: What I Know About AIDS (26 items), How I Feel About AIDS (21 questions), and Some Facts About Me (10 items). The first section (What I Know About AIDS) provided the measurement of HIV/AIDS knowledge in this study.

The knowledge section assesses subjects' understanding of how HIV/AIDS may be manifested, contracted, spread, or treated. The frequency of correct responses to the scale items reflects the subject's knowledge about HIV/AIDS. Raw scores range from 0 to 26. The knowledge scale contains reliability coefficients of .70 (Spearman-Brown) and .67 (Kuder-Richardson 21). Shaw (1991) recommended the SASEG as a practical instrument for assessing the knowledge regarding HIV/AIDS with students at this developmental level.

Quality, involvement, and credibility. We also assessed the impact of the manipulated variables of message quality, involvement, and source credibility through a series of questions on a 7 point Likert-type scale.

Independent variables

Message quality. Messages were developed following Petty and Cacioppo's (1986) standard three-step procedure. First, a list of arguments was developed providing information and indicating the seriousness of the HIV/AIDS epidemic. The list included a variety of argument types ranging between strong and weak. Second, a pilot study was conducted in which groups were asked to rate the strengths of each argument on a 5 point Likert-type scale from 1 (weak) to 5 (strong). By averaging the resulting ratings, 16 arguments were chosen representing the 8 strongest (highest mean ratings) and 8 weakest (lowest ratings). Third, the 8 strongest arguments were developed into a one-page message, and the same was done with the 8 weakest arguments, creating a strong and weak message. Separate groups of students were next asked to read the messages and complete the Thought-Listing Procedure, where they took 150 seconds to list all thoughts that occurred to them while reading the message. After completing the thought-listing,

they post-coded each response as favoring, counter-argumentative, or neutral in response to the message. From this work, we developed our high and low quality messages.

Message source credibility. Small group discussions were conducted with students in order to discuss who they thought were high or low credibility sources regarding the topic of HIV/AIDS. Students shared that they would be most likely to listen to people of their own age, those who were HIV positive or AIDS diagnosed, those who were close to someone HIV positive or AIDS diagnosed, and individuals who lived in their own town. They also offered that they would be least likely to listen to someone who spoke down to them. Sports stars and actors/actresses were not considered viable sources of HIV/AIDS information, unless infected, whereas physicians and researchers were considered moderately-credible sources. Next, a sample population was then asked to brainstorm a list of individuals who they thought would be most credible and least credible sources about HIV/AIDS information. The list of sources students provided was then randomly distributed to another sample population, and their results led to the two sources being an HIV positive teenager (high credibility) and a worried parent (low credibility).

Involvement. Measures of involvement were derived from the AIDS Involvement Measure, with scores ranging from 4 (highest) to 0 (lowest), representing overall involvement with the topic of HIV/AIDS.

Dependent measures

Favorable responses to the prevention message. Participant scores of favorable responses to the message were measured via the Thought-Listing Technique. Each

participant received a summed score of the total number of favorable responses (See Petty & Cacioppo, 1986).

Counter-argumentative responses to the prevention message. Participant scores of counter-argumentative responses to the message were measured via the Thought-Listing Technique. Each participant received a summed score of the total number of counter-argumentative responses (See Petty & Cacioppo, 1986).

Persuasiveness of the prevention message. Measured via the participant's answer of the question. How effective do you think this message would be in changing teenagers' attitudes toward AIDS prevention? Scores ranged from 1 (not effective) to 7 (very effective).

HIV/AIDS knowledge acquisition

Measured via the SASEG section entitled: What I know about AIDS. All items were scored as one point each, producing a range between 0-26.

Manipulation checks

A series of questions assessed message quality, source credibility, and participant involvement on a 7-point Likert-type scale. Scores ranged from 1 (lowest) to 7 (highest).

Hypotheses

Hypothesis 1. Under high-involvement (i.e., high personal relevance of HIV/AIDS to the participant), when listening to the HIV/AIDS prevention message, a higher quality message will produce a greater number of favorable responses, whereas under low-involvement, a higher credible source will produce a greater number of favorable responses.

Hypothesis 2. Under high-involvement (i.e., high personal relevance of HIV/AIDS to the participant), a lower quality message will produce a greater number of counter-argumentative responses, whereas under low-involvement, a low credible message source will produce more counter-argumentative responses.

Hypothesis 3. Highly-involved participants would be most likely persuaded by a high quality message, whereas low-involved participants would likely be persuaded by a high credible message source.

Procedures

This study involved three separate rounds of testing (screening, pre-test, and post-test). The screening session involved the taking of the knowledge section of the SASEG during an extended homeroom period. The pre-test session involved the AIDS Involvement Measure. Prior to the post-test session, participants were randomly assigned to one of four conditions containing high or low credibility sources, and strong or weak arguments. Participants in the post-test session completed demographic information, then read that they would be hearing a taped HIV prevention message presented by an HIV positive adolescent (high credibility), or a worried parent (low credibility). Messages representing either the strong or weak arguments were then played.

Following the message, participants completed the Thought-Listing Technique, and were given 150 seconds to list all thoughts they had while listening to the tape. Participants then returned to their listed thoughts, and rated them as favorable (+), counter-argumentative (-), or neutral (0). Participants then completed the attitude change/persuasion question, and then the manipulation checks on the independent

variables. Finally, participants were invited to take a pamphlet on HIV/AIDS for more information.

Results

Involvement

Participants completed the AIDS Involvement Measure. Participants scoring between 1.0 and 2.0 were classified as high involvement, with those scoring between 2.1 and 4 classified as low involvement.

Manipulation checks

Manipulation checks found all independent variables perceived as anticipated, with the exception of source credibility. Participants tended to rate the low credible source higher than expected. Therefore, perceived credibility was used, rather than the assigned credibility condition.

Prior HIV/AIDS knowledge

No differences were found regarding the prior knowledge of HIV/AIDS information across any of the manipulations.

Favorable responses to the HIV/AIDS message

Data were analyzed according to a 2 (credibility) x 2 (quality) x 2 (involvement) ANOVA. For the favorable responses to the message, results revealed a significant main effects for message quality, $F(7, 270)=6.60$, $p< .02$, and a 2-way interaction for message quality and source credibility, $F(7, 270)=3.72$, $p< .05$. The main effect revealed that participants produced a greater number of favorable responses to the higher quality message ($M=3.98$) rather than the lower quality message ($M=3.29$). The interaction indicated that under high message quality, there was virtually the same number of

favorable responses under both high (M=3.89, SD=2.10) and low (M=4.09, SD=2.36) credibility. However, under low message quality, there was a significant difference between high (M=3.72, SD=2.10) and low (M=2.90, SD=2.02) credibility.

Counter-argumentative responses to the HIV/AIDS message

Data were analyzed using a 2 (credibility) x 2 (quality) x 2 (involvement) ANOVA. For the counter-argumentative responses (see Figure 2), results revealed significant main effects for both quality, $F(7, 270)=13.54$, $p<.001$, and credibility, $F(7, 270)=9.41$, $p<.003$, with a trend for the interaction, $F(7, 270)=3.38$, $p<.07$. The main effects revealed that participants produced less counter-argumentative responses within the higher quality condition (M=0.40), rather than the lower quality condition (M=0.92). Similar results were found with the participants producing less counter-argumentative responses to the higher credible source (M=0.44) than the lower credible source (M=0.90). The interaction indicated a trend that under high message quality (M=0.32, SD=0.85), participants produced a similar number of counter-argumentative responses to the low message quality participants (M=0.49, SD=1.14). However, as expected, under conditions of low message quality, there was a trend where participants exposed to the high credible source produced far less counter-argumentative responses (M=0.56, SD=0.80) than the participants exposed to the low credible source (M=1.24, SD=1.46).

Attitude and persuasiveness

Data were analyzed using a 2 (credibility) x 2 (quality) x 2 (involvement) ANOVA. Results revealed main effects for both quality, $F(7, 270)=5.33$, $p<.03$, and credibility, $F(7, 270)=31.75$, $p<.001$. The main effects revealed that participants exposed to a higher credibility (M=4.65) message source found the HIV/AIDS prevention

message more persuasive and capable of attitude change than their peers exposed to the low credibility (M=3.60) message source. Similar results were found with the higher quality message (M=4.36) being perceived as far more persuasive than the lower quality message (M=3.94).

Discussion

This study found support for the importance of both message quality and source credibility. Participants produced more favorable responses, and found the preventive intervention more persuasive, when exposed to a high quality message, but credibility proved important to the participants exposed to the low quality message. Similarly, participants exposed to a low quality message condition produced less counter-attitudinal responses when receiving the low quality message from a highly credible source (i.e., the HIV+ adolescent).

The purpose of this paper was to shed a different light on the process of designing and evaluating an HIV prevention program for adolescents. Dissimilar to other models used by the prevention field (e.g., ARRM, HBM, TRA), the ELM provides a mechanism to better understand how prevention context variables play a crucial role in program efficacy or failure. The three variables studied in this experiment, source credibility, message quality, and involvement, play a critical role in all HIV prevention efforts, and not just those housed within an ELM framework.

For instance, consider the relationship between message source credibility and message quality. Under low quality conditions, the most influential element that produced enhanced consideration of the message was message source credibility. Even if the persuasive appeal was weak, the perceived high expertise of the source led to

enhanced persuasion. Although this supports prior ELM research (Heesacker et al., 1983; Petty et al., 1981), these findings seem to have a much more important message.

Numerous HIV prevention messages, programs, and workshops are delivered everyday to countless men, women, and children. However, how many of these prevention interventions are assessed of being high in quality to the intended audience? These messages and efforts are usually judged as successful (and many are) by whether the targeted population shows increased knowledge or decreased HIV risk behaviors or HIV positive diagnoses. But, if message quality is truly never assessed, than the question remains as to whether it was the actual message/workshop, or perhaps a combination of the intervention and the program source(s)? In other words, was it the message, source, or both that produced the desired results? Not knowing this information may leave prevention program planners at risk of running the same intervention, with a similar population, but with a source this new audience may find less than credible. Now, results may vary from the previous successful prevention endeavor. It seems that understanding how message quality and message source credibility play a role in the persuasive appeal would benefit the prevention field, in thus allowing for a better understanding of the specific variables the contributed to the prevention appeal being a success.

Although credibility seems an important message context variable, understanding what makes someone credible and why still remains a challenge. Participants in this study actually rated the lower credibility source as higher than anticipated. This may point toward the need for a multidimensional measure of credibility, rather than a high or low Likert-type continuum. One such alternative to this bi-polar credibility rating is Strong's (1968) social influence theory. Here, credibility is addressed as consisting of

the perceived expertise, trustworthiness, and attractiveness of the message source by the audience. By investigating credibility as a multi-factor, rather than unifactor concept, results such as what we found regarding lower credibility sources may become better understood. For example, although the lower credibility source in this study was found to be low in expertise and attractiveness, the source may have ranked higher than anticipated on perceived trustworthiness. Results such as these would shed more light on the cognitive processing that occurred when determining a high or low credibility source.

For example, why do the hip-hop and live theatre interventions work so well with teenagers? By examining this question through the lens of credibility, it could be argued that the adolescent audience finds the peer presenters expert, trustworthy, and attractive. In addition, by viewing this question through the lens of message quality, the teen audience may find these interactive, familiar mediums of communication as being a better way to discuss HIV/AIDS than the standard lecture or workshop format. Or, more likely, credibility and quality combine in some fashion to produce a persuasive appeal. The ELM may be of value to prevention researchers to understand not just if a program worked, but more importantly, why it worked.

Conclusions

As HIV/AIDS continues to spread, HIV prevention efforts must become both more aggressive and creative to better reach the men, women, and teens at risk for infection. Prevention efforts utilizing models of attitude change and persuasion, such as the ELM, may help answer questions or reconfirm data, thus leading to a better understanding of what constitutes a persuasive and effective prevention appeal to varying populations. In other words, as Ward and Waters (2000) note, "there is no doubt that it is

difficult to develop effective prevention programs for hard-to-reach populations... but the fight continues" (p. 74). The perspective of this paper is that to continue the fight against HIV/AIDS, a novel and potentially valuable direction would entail additional work investigating the understudied theory behind the cognitive processing of HIV prevention counseling.

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